

SECTION 26 53 13

CLOCK AND PROGRAM SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. The synchronized network system synchronizes the time on all networked IP addressable clocks, and bell synchronization and stores and forwards diagnostic information.
- B. The synchronized network system utilizes the Owner's 10/100 Base T Ethernet. Time signals emanate from the Network Time Protocol (NTP) server.
- C. Locally-configured system is an appliance that receives diagnostic and sensing data, synchronizes clocks, sends email alerts, and provides capability to distribute firmware and DST updates.

1.02 SUBMITTALS

- A. Manufacturer's literature describing all aspects of the clock system and its components. Product data illustrating choices and finishes.
- B. Installation and set up instructions. Show proposed method of attachment and support.
- C. Written Warranties.
 - 1. Written confirmation of on site testing to prove that the clock system will be functional in all areas of the school. This is to establish that the radio signals will successfully go to all areas requiring clocks.
 - 2. Minimum 2 year Warranty on system controller, clocks, and any system accessories.
- D. Schematic diagram coordinated with the school floor plans describing the master station and the areas of receiver slave clocks to be supported.
- E. Coordinate approval of planned locations of master receiver stations with Owner to ensure overall system function and user convenience.

1.03 MAINTENANCE

- A. Extra materials: Furnish extra materials described below, before installation begins. Extra materials match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
 - 1. Clocks: Quantity equal to 5 percent of the number of clocks installed; minimum of 3 clocks.
 - 2. Provide Operations and maintenance manuals for all components of the system.

PART 2 - PRODUCTS

2.01 CLOCK SYSTEM

- A. Acceptable Manufacturer.
 - 1. American Time and Signal Wireless Atomic Clocks

2.02 PERFORMANCE REQUIREMENTS:

- A. System. The system shall consist of one or more master receiving stations and radio controlled clocks slaved to the master station. All clocks shall be synchronized exactly and automatically reset correctly after power interruptions. Basis-of-Design Product: Subject to compliance with requirements, provide products SiteSync IQ wireless timekeeping system and its components shall be manufactured by American Time & Signal Company.
 - 1. UL Listed.
 - 2. Internal clock accuracy of + or - of 1 minute per year.
 - 3. Sync Option: Ethernet - Capable of configuring two NTP (Network Time Protocol) via the IP address. 12 and 24 hour time adjustment, Automatic Daylight Saving Time and Leap Year correction.

4. Control of up to 6 signal circuits.
5. 100% FCC compliant.
6. Minimum 5 watt transmitter.
7. Time Zone clock support for up to 8 unique time zones.
8. Field software updates via USB flash drive.
9. Battery Backup with Surge suppression.
10. System to be tied into Tone Generator in PA system for bells activation.
11. Remote Connect Web Interface
12. Wireless controller
13. Wireless relay

B. MASTER STATION

1. Input Voltage to power adapter: 115-240VAC, 60Hz
2. Internally fused.
3. Standby Timekeeping: 10 Years
4. Memory/Time backup: CR2032 lithium battery, 240mAh capacity
5. Timekeeping Accuracy: + or – minute/year without correction from Ethernet time reference
6. Program retention: Unlimited
7. Programmable events: 9,999 events total
8. Schedules: 99 maximum
9. Signal Duration: Programmable 1-9 seconds or continuous On
10. Optional Clock Circuits: Dry contacts rated at 250VAC, 8 amps resistive, 5 amps inductive
11. Optional Signal Circuits(6) Dry contacts rated at 250vac, continuous 7.5 amps resistive, 5 amps inductive, 50% duty cycle; 10 amps resistive
12. Temperature range: 32-140 degrees F(0-60 degrees)C
13. Mounting: Provide rack mount kit hardware
14. Communications: Ethernet
15. Display: 128 X 64 Graphics LCD
16. Keypad: 16 button tactile feedback membrane switch
17. RF Frequency Range: 450-470 MHz
18. Internal clock accuracy: + or – 1 minute per year.
19. Synch Option: Ethernet
20. Automatic Daylight Saving Time and Leap Year correction.
21. Control of up to 6 signal circuits.
22. 100% FCC compliant.
23. 5 watt internal transmitters.
24. Time Zone clock support for up to 8 unique time zones.
25. Field software updates via USB flash drive.

C. Ssystem software and platform for locally-configured system

1. System Software Platform and Network Appliance: Standard 19-inch wide single rack space appliance that synchronizes and logs data from clocks, recorders, and timers over Owner's network with signals from the

NTP server. The platform stores diagnostic information from sensors and event logs from the recorders and timers, and forwards this data to assigned personnel by e-mail. The platform enables firmware upgrades, stores clock diagnostics and recorder and sensor logs and performs data backup.

a. Basis of Design Software Product: SiteSync IQ wireless timekeeping system.

D. CLOCKS

1. IP addressable analog NTP synchronized clocks with automated monitoring, alerting, and reporting firmware. The clock firmware performs self-diagnostics on battery life, time accuracy, and strength of network connection, and sends diagnostics to the AMP server. Clocks maintain internal reference so that failure of the master NTP system will not cause clocks to fail. Clocks will continue indicating accurate time within plus or minus 0.35 seconds in 24-hours.
 2. Clocks shall require no hard wiring.
 3. Analog display with moving hour, minute and second hands.
 4. 12" Round surface mounted in all classrooms.
 5. 15" Round surface mounted in auditoriums, gymnasiums and cafeterias.
 6. Plastic housing with clear Lexan lenses.
 7. Finish Color: Black
 8. Clock hour and minute hands to be black, Second hand to be red.
 9. Power: 120VAC power adapter with (4) (1.5V) AA Lithium backup batteries (included Extended battery life 5 years.)
 10. Rear indicator panel: LED indicating receiver wake-up and time sync.
 11. Receiver Sensitivity: Ultra-sensitive UHF receiver (better than -110dBm).
 12. Time to Synchronize: Average 3-5 minutes (syncs automatically 4 times per day).
 13. Operating temperature: 41-131 degrees F
 14. Relative humidity 0%-95% Non-condensing.
 15. Provide sufficient transmitting power to assure complete coverage of all school areas.
 16. Provide all required 120v power wiring and outlets.
- E. Wire Guards. Protective wire guards will be provided for clocks in areas where they may be subject to damage. Clocks in gymnasiums to be protected with wire guards.
- F. Denver Public Schools Network Standards must be followed.
- G. Controller must be mounted in standard network rack.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Installation will be done per industry standards and best practices procedures.

END OF SECTION 26 53 13